

REMARKS

This responds to the Final Office Action mailed October 17, 2006. Claims 1-10 are pending. No amendments have been made in this Response. The Examiner's reconsideration is respectfully requested.

In paragraphs 5 and 6 of the Office Action, claims 1 and 5 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Applicant's admitted prior art (AAPA) in view of U.S. Patent No. 5,912,876 to H'mimy, in further view of U.S. Patent No. 5,235,612 to Stilwell et al. (Stilwell). Applicant respectfully traverses these rejections.

Among the limitations of independent claims 1 and 5 which are neither disclosed nor suggested in the art of record is the requirement that the apparatus comprises an equalization filter that equalizes "spread spectrum signals based on the frequency response of the plurality of radio channels" to eliminate radio channel distortion.

None of the three cited references disclose an equalization filter as claimed. As admitted in the Office Action on page 5, "AAPA in view of H'mimy may not specifically disclose equalizing spread spectrum signals based on the frequency response of the plurality of radio channels to eliminate channel distortion." (Emphasis added). Applicant respectfully submits that it does not. As argued previously, H'mimy does not teach or suggest such an equalization filter and thus does not solve the problem of reducing interference generated from other frequency distorted, coded signals, because only the decoded signal is equalized, not the spread spectrum signals. Notably, H'mimy is directed to improving the reception of an orthogonal frequency division modulated (OFDM) signal, not code division multiple access (CDMA) signals. H'mimy does not teach or suggest equalizing the radio frequency channel spectrum to

recover code orthogonality (that was lost to fading and channel interference) before despreading the signal, as disclosed in the present invention. Instead, H'mimy teaches equalizing the signal after decoding the signal.

Both AAPA and Stilwell fail to cure this deficiency. AAPA does not disclose an equalizer. Stilwell is directed to a system that separates CDMA signals to help cancel interference from other signals, but does not disclose an equalizer that helps to eliminate interference, even if the interfering signals are distorted by fading. Stilwell teaches, in the portions cited in the Office Action, that undistorted interfering coded signals can be decoded and notched out sequentially from the composite spread spectrum signal, leaving the desired signal and the noise behind. This is technically different from an equalizer, because the interfering signal is despread from the CDMA radio channel and removed by a narrow band filter. The remaining signals are re-spread into the radio channel spectrum. Alternatively, this despreading and removal can take place at intermediate frequencies or base band frequencies. See Stilwell, col. 9, ll. 34-40. This process is repeated for all of the potentially interfering signals, until the desired signal (and noise) remains, *i.e.*, "the composite signal 202 consists predominantly of the desired first user spread spectrum signal and the pilot signal." Stilwell, col. 9, ll. 42-44. This technique is not equalization of the radio channel spectrum at any frequency band, baseband, IF or otherwise, and it does not eliminate the effects of fading that would still create interference on the radio channel from the distorted interfering signals that are not eliminated by the narrow band filter. Put simply, filtering taught by Stilwell does not equalize the spread spectrum signals, as claimed by the present invention. Stilwell does not teach equalizing the composite spread-spectrum signal using the inverse-frequency response of the plurality of channels. Thus, Stilwell's technique for removing spreading code interference does not

disclose an equalizer and does not eliminate channel distortion imposed on the interfering coded signals. Further, even if there were a motivation to combine Stilwell with H'mimy and AAPA, the combination would not result in the present invention. Accordingly, Applicant respectfully submits that independent claims 1 and 5 patentably distinguish over the art of record.

Claims 2 and 9 depend from independent claim 1 and include all of the limitations found therein. Each of these dependent claims include additional limitations which, in combination with the limitations of claim 1, are neither disclosed nor suggested in the prior art of record. Accordingly, claims 2 and 9 are likewise patentable.

In paragraph 7 of the Office Action, claims 3 and 6-8 are rejected under U.S.C. § 103(a) as being unpatentable over AAPA in view of H'mimy. Applicant respectfully traverses these rejections.

Among the limitations of independent claim 7 which are neither disclosed nor suggested in the art of record is that the mobile station comprises "an equalization filter having frequency characteristics that are inverse from that of said radio channels," and "a demodulation unit for demodulating the outputs from said equalization filter." Among the limitations of claim 3 which are neither disclosed nor suggested in the art of record is the step of "equalizing then demodulating said modulated signals from said base station." (Emphasis added). While H'mimy discloses an equalizer, H'mimy equalizes the demodulated and decoded signal. In addition to the arguments presented in the previous responses dated July 10, 2006 and February 14, 2006, which are incorporated by reference herein, H'mimy's demodulation unit demodulates and decodes an unequalized, composite spread-spectrum signal. Then, H'mimy teaches

equalizing the demodulated, decoded signals. Thus, H'mimy does not disclose "an equalization filter having frequency characteristics that are inverse from that of said radio channels," and "a demodulation unit for demodulating the outputs from said equalization filter," because H'mimy equalized the demodulated signal rather than the composite spread-spectrum, as admitted on page 5 of the Office Action in connection with the rejection of claims 1 and 5. Therefore, in the absence of any disclosure suggestion of this feature of the invention, claims 3 and 7 are believed to be in condition for allowance.

Among the limitations of claims 6 and 8 which are neither disclosed nor suggested in the art of record are that the mobile station(s) comprise(s) a selection unit that "selects an output with higher communication quality . . . among the outputs by said first and second receiving units." Claim 8 contains a similar structural limitation. Among the additional limitations of claim 3 which are neither disclosed nor suggested in the art or record is the step of "selecting an output with higher communication quality from the equalized, demodulated output and the conventional output."

As argued above in connection with claims 3 and 7, H'mimy does not disclose a demodulator for demodulating the output from said filter unit. Further, H'mimy does not disclose a selection unit. H'mimy determines the subsequence for the received signal using "a memory 125 containing all possible subsequences of signals transmitted by the system . . ." and mixing with the channel estimated frequency response "to generate a matrix $b(n)$ of all possible faded subsequences." H'mimy, col. 5, ll. 5-9. H'mimy does not disclose a selection device that chooses between the outputs of a first receiving unit (an equalizing unit equalizing/demodulation unit) and a second receiving unit (a RAKE receiving unit). There is no such selector, as believed to be asserted on page 10 of the Office Action, which states, "selection with respect to two

methods following ACCS 80 and 90," because H'mimy discloses but a single receiving unit, and at the very least, lacks a RAKE receiver.

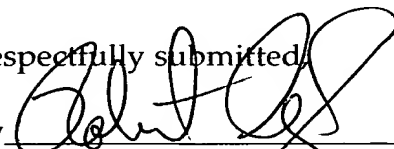
Likewise, AAPA fails to disclose such a selection unit. Unit 110, shown in Fig. 5, is an example of a combining unit used in a conventional RAKE receiving unit in a mobile receiver. It is not a selector unit that compares reception quality between a RAKE receiver and a spread-spectrum equalizer. In the absence of any disclosure or suggestion of these additional features of the invention, and for these additional reasons with respect to claim 3, claims 3, 6 and 8 are believed to be in condition for allowance.

Claims 4 and 10 depend from independent claim 3 and include all the limitations found therein. Each of these dependent claims include additional limitations which, in combination with limitations of claim 3, are neither disclosed nor suggested in the prior art of record. Accordingly, claims 4 and 10 are likewise patentable.

In view of the above amendment, applicant believes the pending application is in condition for allowance.

Dated: December 15, 2006

Respectfully submitted,

By 

Robert G. Gingher

Registration No.: 45,755

DICKSTEIN SHAPIRO LLP

1177 Avenue of the Americas

41st Floor

New York, New York 10036-2714

(212) 277-6500

Attorney for Applicant